



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ACCOUNTING, FINANCE AND MANAGEMENT SCIENCES



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ISSN: 2225-8329

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To Link this Article: <http://dx.doi.org/10.6007/IJARAFMS/v4-i1/570>

DOI:10.6007/IJARAFMS /v4-i1/570

Received: 16 January 2014, **Revised:** 18 February 2014, **Accepted:** 27 February 2014

Published Online: 20 March 2014

In-Text Citation: (Houcine & Boubake, 2014)

To Cite this Article: Houcine, R. E. L., & Boubake, A. (2014). Share Repurchasing and the Policies of Stock-Options. *International Journal of Academic Research in Accounting Finance and Management Sciences*. 4(1), 572– 589.

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Vol. 4, No. 1, 2014, Pg. 572 - 589

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Share Repurchasing and the Policies of Stock-Options

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Abstract

The objective of this paper is to examine the relation between share repurchases and stock options. In fact, certain studies demonstrate that the development of stock option plans since the beginning of the 1990s is also considered one explanation for the increase in equity programs for repurchasing shares. We have tested the validity of our hypothesis on a sample of 77 French firms listed during the 2003-2008 period. The results demonstrate a positive link between the performance of near future exercise of employee stock options and share repurchases. The desire to avoid the dilution associated with the performance of stock options can thus be one of the motives for making share repurchases. The results subsequently demonstrate that directors holding a substantial number of stock options encourage companies to make share repurchases. On the other hand, we detected a negative relationship between the existence of managerial stock options and the augmentation of dividends.

Keywords: Share Repurchase, Stock Options, Dilution, Managers

Introduction

Several recent studies focus on the implementation of *stock option* plans (Fenn and Liang, 2001; Weisbenner, 2000; Kahle, 2002; Bens et al., 2003). These studies demonstrate that the development of *stock option* plans since the beginning of the 1990s is also regarded as one explanation for the increase in share repurchase programs.

The development of *stock option* plans may justify buyback programs for several reasons. The firms who offer *stock options* are encouraged to make repurchases in order to avoid dilution associated with the exercise of options. Additionally, managers who own *stock options* have an interest in substituting repurchases for dividend increases, since, in some cases, the payment of dividends reduces the value of their options. Furthermore, *stock options* can be considered as a tool allowing the alignment of directors' interests with those of the shareholders (Yermack, 1995; Palia, 2001). Thus, managers holding *stock options* are induced to act in the interest of shareholders, and consequently, to increase the payments of shareholders' funds, potentially through a share repurchasing intermediary.

The link between the development of *stock option* plans and those of share repurchasing programs have certainly been tested in the American context. In this paper, we

propose to study this link in the French context, as the French case is particularly intriguing. In fact, French regulations concerning share repurchasing relaxed significantly in July, 1998; and since this date, a large number of French companies have approved of share repurchasing programs. According to estimates from the AMF, between 1998 and 2002, the number of French companies having announced a share buyback program jumped from 49 to 380. Similarly, the growth of repurchases is associated with the significant development of *stock option* plans.

This paper is structured as follows: the first section is devoted to the policies of *stock option* plans; the second section details the hypothesis underlying the link between share repurchases and *stock options*; and the third section describes the sample, data sources, and the variables. Finally, the fourth section presents the results.

The Relation between Share Repurchasing and *Stock Options*

Certain studies tend to explain the popularity of share repurchases through the extensive use of purchasing *stock options* for employees, which significantly dilute the ownership in companies practicing these kinds of operations. Thus, companies would then buy their shares to offset the dilution of earnings per share. Several American studies have recently observed a link between option plans for repurchasing shares and buybacks (Fenn and Lange, 2001; Bens et al., 2003). It is also conceivable that some firms repurchase their shares in order to allocate these shares to employees under stock option plans and share repurchases.

We propose to explain two hypotheses underlying a link between share repurchases and *stock options*. The first concerns the relationship between share repurchasing and the dilution associated with the exercise of *stock options*. The second focuses on the impact of directors with stock options on changing the parameters of remuneration policy (share repurchasing and dividends).

Hypotheses

According to Jolls (1998), granting options that allows managers to repurchase shares should have the effect of encouraging repurchases rather than dividends because they do not dilute the value of the firm's shares. The revenue output accompanies a proportional reduction in the number of options held by the shareholders. Consequently, *stock options* give the right to purchase options at a predetermined price worth more after share repurchases following the distribution of dividends. His empirical study validates this hypothesis since the level of executive *stock options* is twice as high in firms that buy shares than those that distribute dividends. Thus, Fenn and Liang's results (2001) are similar to those of Dittmar (2000), who obtained more mixed results.

Exercising *stock options* involves a capital increase that leads to a dilution of EPS and control.

The dilution associated with *stock option* policies could very well endanger the property of shareholders, especially if the exercise price is very weak and if the options consist of a large part of capital.

Thus, firms are required to deal with the problem of earnings dilution per share control. For this reason, they must initiate repurchasing programs for at least two reasons: 1) either to redeem all or part of the newly created shares following the exercise of *stock options* (*stock options* that are part of *stock option* plans); 2) or to deliver the shares upon the exercise of *stock options* (*stock options* that are part of stock purchase plans).

In order to avoid dilution from *stock option* plans, companies have an incentive to make repurchases prior to the exercise of options. This finding has been tested and validated in the American context by Weisbenner (2000); Kahle (2002); Bens et al (2003), and by Albouy and Morris (2006) in the Canadian context. Weisbenner (2000) detects a positive and statistically significant link between share repurchases and an attribution of *stock options* during the three or four years that precede the repurchasing of shares. According to Weisbenner (2000), this last variable represents a good approximation of a number of *stock options* exercised during, or just after, the repurchasing, since the tax exemption period of these options varies between three to four years. Kahle (2002) demonstrates *stock options* that will be exercised in the near future (who are measured by *stock options* in circulation and exercisable *stock options*) are positively linked to repurchasing activity (decision and amount of repurchases). However, Bens et al (2003) show a positive relationship between BPA dilution associated with the exercise of *stock options* and share repurchases. They thereby show that share repurchases are important when a company's BPA level is below the directors' desired threshold. Finally, Albouy and Morris (2006) show a positive and statistically significant relationship between the exercise of *stock options* and the likelihood of repurchasing. Furthermore, they discover that this link is accentuated in a period of strong economic growth.

Based on theoretical and empirical arguments, it is possible to formulate the following hypothesis:

H1: Firms in which employees exercise a significant number of stock options are encouraged to make share repurchases.

The agency theory is born from the separation between ownership and power, namely the existence of firms in which the directors are not shareholders. Jensen and Meckling (1976) demonstrated that the agency costs are much higher when the percentage of capital owned by directors is low. If the share repurchases are associated with equity awards to directors, they reinforce managerial ownership, and in this manner improve the convergence of interests between directors and shareholders.

The shareholders possess some *stock options* favoring the transfer of funds through share repurchases. Thus, several studies (Yermack, 1995; Palia, 2001) show that *stock option* policies are a way to permit the alignment of directors' interests with that of shareholders. Directors possessing *stock options* are therefore incited to act in the interest of shareholders, and consequently augment the transfer of shareholder funds, potentially using share repurchases as an intermediary.

Directors with *stock options* can modify the parameters of remuneration policy using another method; therefore, the majority of option contracts do not provide an adjustment of exercise on the former dividend price. As an example, Murphy (1998) finds that less than 2% of the 618 large companies awarding *stock options* offer protection against dividend payment options. The dividend payment thereby reduces the value of *stock options* and consequently reduces the wealth of the option holders (the issuing of new shares is not fungible with existing shares). On the contrary, the absence of dilution due to share repurchasing and the eventual price stabilization resulting from share repurchasing increases the value of *stock options*. Consequently, directors, who tend to make decisions that increase the value of their options while avoiding those that fall, dispose of *stock options*, inducing firms to substitute buybacks for dividend increases.

However, the results found by Weisbenner (2000) underscore a negative correlation between allocated options of the five highest paid directors and share repurchases. According

to Weisbenner (2000), the directors possessing *stock options* induce firms to limit the distribution of profits, regardless of whether such distributions are made in the form of dividends or share repurchases.

On the other hand, Jolls (1998); Fenn and Liang (2001); Kahle (2002) confirm a positive link between *stock options* allocated specifically to directors and share repurchases. First, Jolls (1998) shows that the magnitude of *stock options* granted to directors promote share-repurchasing operations. Then, Fenn and Liang (2001) reveal a statistically negative relationship between executive *stock options* and the distribution of dividends. Fenn and Liang (2001) both show a statistical positive relationship between *stock options* and share repurchases. Finally, Kahle (2002) finds that the probability of share repurchases is positively and significantly linked to executive granted *stock options*, whether exercised or not. On the other hand, once a decision is made to repurchase shares, directors' *stock options* do not impact the amount of buybacks.

Based on theoretical arguments and the results found in the majority of the previous arguments, it is possible to pose the following hypothesis:

H2: Firms in which directors hold a significant number of stock options are incited to substitute buybacks with the augmentation of dividends.

The Empirical Studies of the Relation between Share Repurchasing and Stock Option Plans

Firms are able to use share repurchases in order to avoid dilution associated with *stock option* plans. This ascertainment was tested and validated by certain authors. In studying the collection schemes for stocks between 1992 and 1996 in the United States, Kahle (2002) contested that the probability of repurchasing is positively related to the total exercisable options in the course of the repurchasing year since the number of options for that year follow the announcement of the buyback. He concludes that there is desire to avoid dilution from the exercise of *stock options*. Sampling 252 Canadian firms between 1990 and 1999, Albouy and Morris show a significantly positive relationship between the likelihood of redemption and the exercise of stock options, supporting the connection of the exercise of *stock options* to avoid dilution of earnings per share assumption. Balachandran et al (2008) confirm this hypothesis through a sample of Australian companies. Weisbenner's results (2002) for a sample of 628 firms between 1994 and 1999 equally proceed in this sense: the size of the option program and the number of options to exercise during the year significantly influence ulterior share repurchasing programs. More recently, Babenko (2009), contests that the repurchasing of shares is positively linked to a number of options in circulation are attributed to directors and/or employees. Moreover, they demonstrate that the market reacts favorably to share repurchasing announcements when employees own a number of share options. Finally, Bens *et al* (2003); Myers *et al* (2007) show that the firms are incited to repurchase shares when their EPS is below managers' desired thresholds. They conclude that companies are willing to increase their earnings per share following the exercise of *stock options* to justify their use of share repurchasing. Ultimately, the development of *stock option* plans may justify the repurchasing of shares (Weisbenner, 2002; Fenn and Liang, 2001; Kahle 2002; Albouy and Morris, 2006; Balachandran *et al.*, 2008). These results show that firms repurchase their own shares in order to provide the necessary funds and to avoid the dilution from the exercise of *stock options*.

Empirical Validation

We hope to test the influence of share purchasing plans on share repurchasing decisions. To our knowledge, few French studies were interested in the potential link between the probability of workforce buybacks and the extent of stock option plans. In this regard, our study significantly contributes to the literature regarding share repurchasing in France.

Samples and Data Sources

In the case where a company decides to create its own share repurchasing program, it must provide the AMF with a monthly report of the number of shares that are repurchased. This information is published by the AMF as data sheets on their website. The records present each type of operation carried out by the company (purchasing of securities, handovers, transfers or cancellations), the number of shares involved, and the date of the operation. This permits data collection relative to workforce repurchases. This information allows us to associate workforce repurchases with their programs, to know how many shares were repurchased by a certain company under each reported program, thus allowing for the distinction between active and inactive companies.

Regarding variable stock options, no database lists information concerning *stock option* plans granted in France. Therefore, we were required to manually collect the information (starting with company annual reports). In order to test the link between share repurchase and overall *stock options* granted to employees, executives or not, we selected a sample of 462 observations for 77 companies on the SBF 120 index that traded between 2003 and 2008, 9 of which do not allocate *stock options*. Three variables were used for *stock options*, *stock options* granted *stock options* in circulation and exercisable *stock options*.

Share repurchase on the French market were widely used during the period of study considered (2003-2008). Of the 270 firms observed between the January 2003 and December 2008 fiscal years, more than half the sample companies (58.44%) carried share repurchasing. Distribution operations of repurchases per year show that 2007 is the most active year in terms of monthly returns. The number of shares repurchased in 2007 totaled 103,013,845, or 25.68% of purchases made during this period of observation. Figure 2 also shows that *stock options* had significantly increased during the period of observation. Between 2003 and 2008, 63.2% of companies from our study allocated *stock options*. Furthermore, the average number of *stock options* in circulation in 2008 (approximately 11.3 million) was greater than those observed in 1999 (about 8 million).

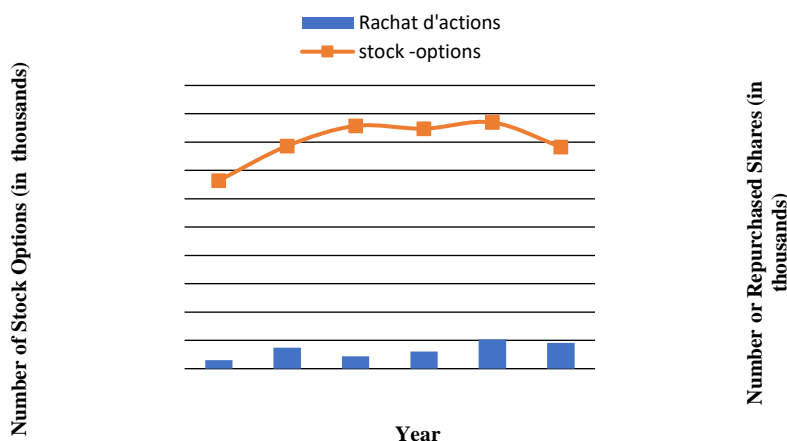


Figure 1. Share Repurchases and Company Stock Options from 2003-2008

Variable Measurement and Methodology

The first hypothesis supposed that companies in which employees have a significant amount of *stock options* are encouraged to make share repurchases. Thus, in order to avoid excessive dilution, companies have an incentive to make repurchases prior to the exercise of *stock options*. Therefore, *stock options* to be exercised in the near future should be positively associated with the decision to repurchase shares. To study the repurchasing decision, we propose to conduct logistic regressions by choosing an independent variable: DECISION.

This variable was measured by a binary variable that takes the value of 1 if the firm had at least one reported program during the period of observation, and 0 otherwise (Dereeper and Romon, 2006; Mellouli, 2009).

DECISION = 1 if the firm had at least one active share repurchasing program

DECISION = 0 if the firm had no share repurchasing program

The second hypothesis supposes that the companies in which directors hold a significant number of *stock options* are encouraged to make repurchases and limit dividend payments. It implies that *stock options* granted to directors should be linked, both positively to the decision of repurchasing, and negatively to the decision of increasing dividends. We propose in this case, to conduct two logistic regression models. The dependent variable of the first logistical model is the variable (DECISION). That of the second model (AUG-DIV) takes the value of "1" if the company increases the transfer of dividends during the year and "0" if not.

Concerning the variables relative to stock options (principal variables), they are classified into two groups, depending on the type of option holders:

- Three relative variables for employee stock options. The first, (SO CIRC) measure the fraction of capital able to be implied by employee stock options in circulation: it is equal to the total number of stock options in circulation and the total number of shares in circulation. The second variable (SO EXER) is defined by the ratio between exercisable stock options and the number of shares in circulations. The third (SO GR) is defined by the ratio of stock options granted and the number of shares in circulation. Allocated stock options represent if the stock options are granted to employees and directors, or not. Stock options in circulation and exercisable stock options are used as a proxy of stock options to be exercised in the near future. In other words, stock options in circulation and exercisable stock options are used as indicators of stock options to be exercised during the year of redemption, or just after we measure the fraction of capital that can be implied by stock options in circulation: it is equal to the total number of stock options in circulation to the total number of shares in circulation. Stock options in circulation are used as a proxy for stock options that will be exercised in the near future. In other words, stock options in circulation are used as an indicator for stock options that will be exercised during the redemption year, or just after.

- One variable relative to managerial stock options is (MG-SO), which relates the number of stock options granted to directors during the redemption year to the number of shares in circulation. We used it to test the second hypothesis.

Additionally, share repurchasing operations can be influenced by the financial characteristics of the firm. Therefore, four control variables are incorporated into our models.

The existence of sub-debt may also be an element that characterizes the way firms conduct repurchases. Thus, indebted companies are obligated to regularly transfer liquidity to creditors. This limits the funds available to the director by imposing stricter management (Jensen, 1986). Debt reduces the distribution of cash to shareholders, thereby limiting share

repurchasing. We use the connection between total debt and the active total, noted DEBT. This debt ratio supposes a negative association with repurchases.

The distribution of FCF to shareholders may justify the recourse to actual company takeovers. Thus, the transfer of available funds to shareholders as repurchases limits the funds available to directors and consequently reduces the risk of funding underperforming projects. This helps resolve agency conflicts between shareholders and directors, generating costs (Jensen, 1986). Based on these analyzes, FCF related variables should positively influence the actual rate of redemption. The FCF variable is the difference between the operational result and the investment expenditures of the actual total. This FCF variable is supposed to be the positive link for repurchases.

An important element in the concept of value creation involves the turmoil wrought by the remuneration policies for certain employee categories. The management team and executives of companies have often seen, in recent years that a portion of their salaries depend on the achievement of certain objectives and indicators of performance or profitability. These provisions are a direct approach to creating shareholder value in that they are intended to combine the aspirations of a company's directors with those interests of its shareholders. By offering securities to their employees, companies expect to enjoy increased profits associated with the improvement of labor productivity (Gerhart and Rynes, 2003). Incentives for share-based compensation and direct shareholding policies can mitigate conflicts between directors and shareholders (Jensen *et al.* 1975; Lambert and Larcker, 1991; Charreaux, 1997; Fenn and Liang, 2001). In this context, the allocation of *stock options* is to align the interests of directors with those of shareholders, in other words, to maximize shareholder value creation. Consequently, the directors with *stock options* are incited to act in the interest of shareholders, therefore increasing the transfer of shareholders' funds through share repurchases. One indicator of economic performance is used. This variable is measured by the ratio of operating income following the taxing of economic assets. This ratio is not impacted by the financial structure of the company; it indicates the rate of return on equity when the debt is zero.

Historically, dividends were the preferred form to distribute profits. It was not until the 80s in the United States, as we mentioned above, that share repurchases have begun to grow significantly. In conditions of perfect and efficient capital markets, the two instruments allow for a distribution of cash for the exclusive use of shareholders at the expense of a third party. This is achieved by a disbursement of cash by the company, which will go to neither the workers nor the creditors or suppliers (Lease *et al.*, 2000). Thus, share repurchases are equivalent to the transfer of dividends to the shareholder. However, the theory highlights differences between the dividend and redemption (taxation, flexibility etc.), therefore the substitutability is questionable (Dereeper and Romon, 2006). Empirically, complementarity as well as substitutability was affirmed. Table 1 summarizes the different variables used.

Table 1

Definition and measure of Variables

Code	Definition
DECISION	Binary variable that takes the value of "1" if the company proceeds with buybacks during the year; in other cases it takes the value of "0".
AUG-DIV	Binary variable that takes the value of "1" if the company increases dividends during the year, "0" if not.
SO CIRC	The ratio between the number of employee <i>stock options</i> in circulation at the date of the closure of the exercise and the number of shares in circulation.
SO EXER	The ratio between the number of exercisable employee <i>stock options</i> and the number of shares in circulation.
SO GR	The ratio between the number of employee <i>stock options</i> granted and the number of shares in circulation.
MG-SO	The ratio between the numbers of <i>stock options</i> granted to executives and the number of shares in circulation.
DEBT	The ratio between total debt and total assets
FCF	The ratio of net income less dividends and increased depreciations and total assets of the firm
ROA	Net Profit/Total Assets
DIV	Dividends/Net Assets

Results and Discussions

We study, first, the characteristics of firms that engage in share repurchases. Then, we examine the impact of employee *stock options* on the decision to repurchase. Finally, we verify the impact of managerial *stock options* on share repurchase and on the augmentation of dividends.

The Characteristics of Firms Conducting Share Repurchases

Are share repurchasing operations influenced by the characteristics of the initiating company, particularly those relating to *stock option* plans? To respond to this question, we divide the sample into two subsets. The first consists of firms that have carried out share repurchases during the year of repurchases (active companies). The second consists of companies with opposing characteristics (inactive companies). Then, we perform a univariate comparison between the two sub-samples based on specific *stock option* plan variables (SO CIRC, SO EXER, SO GR and MG-SO) and traditional financial variables (DEBT FCF, ROA and DIV). While table 2 shows the descriptive statistics for variables, Table 3 shows the characteristics for the two sub-samples according to the share repurchasing decision.

Table 2

Descriptive Statistics of Variables

	Average	Standard deviation	Min	Max	Median
DECISION	0.5584416	0.4971111	0	1	1
SO CIRC	0.0372295	0.367194	0	0.295618	0.029091
SO EXER	0.0198795	0.263765	0	0.213368	0.012005
SO GR	0.0072633	0.0107531	0	0.105351	0.004206
MG-SO	0.0010061	0.001944	0	0.019480	0.000062
DEBT	0.2628447	0.1686537	0	0.9	0.256772
FCF	0.20938	0.0435231	-0.17700	0.262870	0.023473
ROA	0.0355076	0.0554878	-0.20932	0.377845	0.033755
DIV	0.2686309	0.2478524	0	1	0.262384

DECISION :Binary variable that takes the value of “1” if the company proceeds with buybacks during the year; in other cases it takes the value of “0”. SO CIRC :The ratio between the number of employee *stock options* in circulation at the date of the closure of the exercise and the number of shares in circulation. SO EXER: The ratio between the number of exercisable employee *stock options* and the number of shares in circulation. SO GR: The ratio between the number of employee *stock options* granted and the number of shares in circulation. MG-SO: The ratio between the number of *stock options* granted to executives and the number of shares in circulation. DEBT: The ratio between total debt and total assets. FCF: The ratio of net income less dividends and increased depreciations and total assets of the firm. ROA: Net Profit/Total Assets. DIV: Dividends/Net Assets.

The observational data on the mechanism of *stock options* is based on the first finding. Firms with an incentive-based share repurchasing program average 3.722% of *stock options* in circulation, and almost 2% are exercisable. Some firms do not have *stock options* in circulation, while others hold up to 29.56% of all their shares in circulation. Therefore, the majority of companies (80.73%) possess *stock options* in circulation and 70.99% have exercisable *stock options*. This observation is in agreement with studies postulating that the probability of announcing a share repurchasing program is positively linked to the number of *stock options* in circulation (Albouy and Morris, 2006; Balachandran *et al.* 2008).

Table 3

Test Mean Difference in the Characteristic of Firms in the Purchase Decision

	Decision	Average	U of Mann Whitney	Probability
SO CIRC	0	0.0358892	-2.846	0.0044***
	1	0.0381827		
SO EXER	0	0.0183212	-3.880	0.0001***
	1	0.0209876		
SO GR	0	0.0075591	-1.340	0.1802
	1	0.007053		
MG-SO	0	0.0008936	-2.917	0.0035***
	1	0.0010862		
DEBT	0	0.2942243	2.355	0.0185**
	1	0.2405303		
FCF	0	0.0185181	-1.087	0.2770
	1	0.0226589		
ROA	0	0.0212392	-5.222	0.0000***
	1	0.045654		
DIV	0	0.2218794	-4.780	0.0000***
	1	0.3018763		

SO CIRC :The ratio between the number of employee *stock options* in circulation at the date of the closure of the exercise and the number of shares in circulation. SO EXER: The ratio between the number of exercisable employee *stock options* and the number of shares in circulation. SO GR: The ratio between the number of employee *stock options* granted and the number of shares in circulation. MG-SO: The ratio between the number of *stock options* granted to executives and the number of shares in circulation. DEBT: The ratio between total debt and total assets. FCF: The ratio of net income less dividends and increased depreciations and total assets of the firm. ROA: Net Profit/Total Assets. DIV: Dividends/Net Assets.

***, **, * signifies that the coefficients are statistically significant at the respected 1%, 5%, 10% thresholds.

The first assumption implies that company employees who are conducting share repurchases should exercise more *stock options* than companies who do not carry out these operations. According to the predictions of this hypothesis, the test results show that the difference in average wages for *stock option* in circulation and exercisable *stock options* are, on average, significantly higher for active companies.

In regard to the variable of *stock options* in circulation and exercisable *stock options*, the results indicate significant differences at the 1% threshold between firms that buy and those who do not redeem. We find that companies who are active in share repurchases have more *stock options* in circulation and exercisable *stock options*. Indeed SO CIRC and SO EXER variables are, respectively, an average of 3.818% and 2.098% for active companies, versus 3.588% and 1.832% for inactive companies. This result is consistent what that of Kahle (2002), who found that the number of employee *stock options* in circulation is almost twice as large for firms that are repurchasing shares.

Our results are also consistent with those of Kahle (2002), revealing that managerial *stock options* granted (MG-SO) are on average significantly higher for companies (10.862% versus 8.936%).

Moreover, according to the agency theory, share repurchases should be positively related to the level of cash flow and negatively to the debt ratio. In accordance with the predictions of agency theory for the sample of active companies, the average variable DEBT is equal to 0.240, while the companies in the second sub-sample have a statistically higher level of debt, amounting to 0.294. However, the comparison between the two sub-samples revealed no significance regarding the average FCF. On the other hand, the dividend distribution is significantly different at 1%, on average. Dividend distributions are carried out far more in firms that repurchase their own shares.

In summary, the magnitude of earnings and managerial *stock options* seems specific to firms conducting share repurchases. In addition, companies initiating a share repurchasing program are characterized by a high FCF level, low debt and a high dividend level.

Share Repurchasing Decision and Employee Stock Options

The first hypothesis is that firms that exercise a substantial number of *stock options* are encouraged to care out the repurchasing of shares. Thus, to reduce the problem of dilution, companies need to repurchase shares prior to exercising options. This implies a positive relationship between repurchases and employee *stock options* that will be exercised in the near future. To this end, the *stock options* in circulation (SO CIRC) and exercisable *stock options* (SO EXER) should be positively associated with the decision to repurchase shares. The link between the decision to repurchase shares and employee *stock options* is determined using the Logit regression model. This study examines the relationship between share repurchases and stock options from 2003 until 2008.

Table 4

Logit Regression on the Decision to Repurchase Shares and Stock Options

	Equation 1	Equation 2	Equation 3
CONSTANT	-0.337423** (0.050)	-0.453298** (0.015)	-0.359840** (0.032)
SO GR	20.330200* (0.084)		
SO CIRC		5.874869** (0.041)	
SO EXER			8.964497** (0.033)
DEBT	-1.596441** (0.012)	-1.495784** (0.019)	-1.544521** (0.015)
FCF	-1.259011 (0.616)	-1.192760 (0.627)	-0.825046 (0.735)
ROA	6.927327*** (0.004)	7.634672*** (0.001)	7.371170*** (0.001)
DIV	0.894274** (0.040)	1.003662** (0.027)	0.943521 (0.036)
Likelihood-ratio	-298.340 (0.0000)	-300.061 (0.0000)	-307.505 (0.0007)
Number of obs.	462	462	462

SO CIRC: The ratio between the number of employee *stock options* in circulation at the date of the closure of the exercise and the number of shares in circulation. SO EXER: The ratio between the number of exercisable employee *stock options* and the number of shares in circulation. SO GR: The ratio between the number of employee *stock options* granted and the number of shares in circulation. DEBT: The ratio between total debt and total assets. FCF: The ratio of net income less dividends and increased depreciations and total assets of the firm. ROA: Net Profit/Total Assets. DIV: Dividends/Net Assets.

***, **, * signifies that the coefficients are statistically significant at the respected 1%, 5%, 10% thresholds.

Table 4 reports the results of different Logit-type equations (from 1 to 3). These equations test the link between the exercise of employee *stock options* and the decision to repurchase.

According to the Logit-type equations (1, 2 and 3), the ratio of *stock options* granted (SO GR), the ratio of *stock options* in circulation (SO CIRC) and the ratio of exercisable *stock options* (SO EXER) are positively and significantly related to the dependent variable (DECISION). The extent of the exercising of *stock options* has a positive impact on the decision to repurchase shares.

Indeed, the coefficient of the ratio of *stock options* granted is positive and significant at the 10% threshold (Equation 1). This relationship can be explained by the fact that firms offering securities to their personnel hope to enjoy the increased profitability associated with the improvement of labor productivity (Gerhart and Rynes, 2003). Incentives for share-based compensation and direct shareholding policies can mitigate conflicts between managers and shareholders (Jensen *et al.*, 1976; Lambert and Larcker, 1991; Charreaux, 1997 and Fenn and Liang, 2001). In this context, the allocation of *stock options* in order to align the interests of executives with those of shareholders is, in other words, to maximize value creation for shareholders. Therefore, managers with *stock options* have an incentive to act in the interests of shareholders, thus increasing the payments of cash to shareholders through share repurchases.

Likewise, there is a significantly positive relationship at the 5% threshold, between both decisions: to purchase *stock options* in circulation (SO CIRC), and exercisable *stock options* (SO EXER) (Equation 2; 3). However, the probability for exercisable *stock options* is higher than the amount of *stock options* in circulation.

These two previous ratios are used as proxies for *stock options* to be exercised in the near future. However, a significant number of options in circulation were recently awarded and, following their tax exemption period, cannot be exercised for up to five years. The ratio of exercisable *stock options* more accurately measures the near future options of employees than the *stock options* in circulation. Validating the first hypothesis depends on the two links between exercisable *stock options* and the share repurchases, as well as *stock options* in circulation and the decision to repurchase. The coefficients of the variables (SO EXER) and (SO CIRC) are significantly positive at the 5% threshold, which validates the existence of a positive relationship between the exercise of *stock options* and the decision to purchase.

The first hypothesis, which stipulates that firms with employees holding a significant number of *stock options*, are encouraged to carry out share repurchases, seems to be corroborated. We can therefore conclude that the desire to avoid the dilution from the exercise of *stock options* is a plausible explanation for the increased use of French companies repurchasing shares.

The results are consistent with those found by (Kahle, 2002; Albouy and Morris, 2006; Bens *et al.*, 2003). Thus, Kahle (2002); Albouy and Morris (2006) show that the magnitude of the exercise of employee *stock options* on the promotion of redemptions. On their side, Bens *et al.* (2003) show a positive relationship between repurchases and dilution from the exercise of *stock options*.

Moreover, the results obtained (equations 1 to 3) show that share repurchasing is associated with the characteristics of a firm. Our research results have come to confirm the conclusions of previous studies on the negative relation between debt level and the completion of share repurchases (Dittmar, 2000; Horvakimian, 2004; Albouy and Morris, 2006). In fact, in all of the equations, the DEBT variable has a negative coefficient and is statistically significant at the 5% threshold. Firms with a low leverage ratio are encouraged to conduct share-repurchasing operations in order to achieve an optimal financing structure. The repurchasing of shares allows a company to readjust its financial structure and increase its leverage. In effect, debt allows the exercise of two types of control over the managers. On the one hand, it encourages managers to renegotiate their shares more regularly; therefore, assuring them greater control of creditors. On the other hand, the risk of bankruptcy encourages managers to maintain good behavior.

The FCF level is equally negatively linked to repurchasing activity, but not in a significant way. Furthermore, we noticed a significantly positive relationship between the decision to repurchase and the firm's performance at the 1% threshold, which is measured by the profitability of equity. This can be explained by the fact that the highest performing companies repurchase more shares. This was also detected by Nohel and Tarhan (1998), who showed that the disciplinary powers of the market mechanism replace faulty internal management. On the other hand, as it was suggested by Denis and McConnel (2003), distribution policies can contribute to improving the performance of a firm by reducing agency conflicts.

Finally, a significantly positive relationship was observed in the equations between the decision to repurchase and dividend policy. Our empirical results show that the repurchasing of shares and the payment of dividends constitutes two modes of distribution of additional funds. Companies that proceed with share repurchases are also those who distribute dividends. In effect, the repurchasing of shares is considered as a complementary remuneration method for dividends. These findings are in the same direction as the works studying the choice between share repurchases and dividend distribution (Fama and French, 2001; Albouy and Morris, 2006; Dereeper and Romon, 2006).

Share Repurchases/Dividend Augmentations and Managerial Stock Options

The second hypothesis supposes that firms in which managers hold a substantial number of *stock options* are moved to substitute repurchases for dividend increases. This hypothesis implies that managerial *stock options* granted (MG-SO) must both be positively related to repurchases and negatively to dividend increases.

To test this hypothesis, we estimate two logistic regression models. For the first model, the dependent variable takes the value of "1" if the company performs share repurchases throughout the year, and "0" otherwise. In the second model takes the value of "1" if the company decides to increase dividends and "0" otherwise. In other words, the dependent variable of the second model takes the value of "1" if the company increases its annual dividend/earnings ratio during the year and "0" otherwise.

Table 5

Share Repurchases/Dividend Increases and Managerial Stock Option

	DECISION Equation 4	AUG-DIV Equation 5
CONSTANT	0.632251*** (0.004)	0.540263** (0.012)
MG-SO	123.2539** (0.035)	-111.7915** (0.031)
DEBT	-1.875242*** (0.001)	-0.943457* (0.094)
FCF	-1.45779 (0.554)	4.247418* (0.058)
ROA	9.249356*** (0.000)	8.500177*** (0.000)
Likelihood-ratio	-301.52013 (0.0000)	-301.70738 (0.0000)
Number of obs.	462	462

AUG-DIV: Binary variable that takes the value of "1" if the company increases dividends during the year, "0" if not. MG-SO: The ratio between the number of *stock options* granted to executives and the number of shares in circulation. DEBT: The ratio between total debt and total assets. FCF: The ratio of net income less dividends and increased depreciations and total assets of the firm. ROA: Net Profit/Total Assets. DIV: Dividends/Net Assets.

***, **, * signifies that the coefficients are statistically significant at the respected 1%, 5%, 10% thresholds.

According to Table 5, it appears that the extent of granting *stock options* to executives favors buybacks (the decision to purchase). Thus, managerial *stock options* are significantly and positively associated with the decision to repurchase: according to Equation 4, the indicator measuring *stock options* granted to managers, as the ratio of managerial stock options granted (MG-SO), is positively and significantly associated to the dependent variable (DECISION). On the other hand, the holding of *stock options* on the part of executives has a significantly negative impact on the decision to increase dividends. Indeed, the variable (MG-SO) is significantly associated with the 5% threshold dependent variable (AUG-DIV), as shown in Equation 5.

The results show that executive holding *stock options* lead companies to repurchase shares. Therefore it appears that companies are encouraged, at least in part, to make repurchase in order to achieve one of the main objectives of *stock option* plans, namely the reduction of conflicts between managers and shareholders. To this end, this will result in the confirmation of the postulated theory that the intention to avoid dilution of earnings per share that arises from the exercise of *stock options* is a plausible explanation for firms to repurchase shares. Note that this result is consistent with recent studies such as those of (Bens et al., 2003; Myers et al., 2007; Balachandran et al., 2008; Ghosh et al., 2008 ; Babenko, 2009).

The results also show that executive *stock options* have a negative impact on the decision of dividend augmentation. The link between the granting of *stock options* to managers and the substitution of repurchases for dividends is confirmed. The fact that the

payment of dividends reduces the value of executive *stock options* seems like a plausible explanation for an increased reliance on repurchases by firms. Indeed, as has been suggested by Lambert and al (1989), who examined the impact of the introduction of managerial *stock options* on distribution policies, the adoption of *stock options* provides further arguments to change the dividend policy. The research evidence on financial markets have showed that exercised *stock options* are not “protected dividends”. Subject to this reality, dividend distribution will decrease the value of *stock options*, which give managers more reason to avoid dividend distribution to avoid decreasing the value of options.

Our results are contrary to those obtained by Poulain-Rehm (2003), who shows that on the French stock market, the policy of dividend distributions has little impact from the introduction of *stock option* plans. Our results follow the same direction as those obtained by Kahle (2002); Jolls (1998); Fenn and Liang (2001) in the American context. Jolls (1998) and Fenn and Liang (2001) confirm the second hypothesis and show that managers holding *stock options* favor share-repurchasing substitutions for dividend increases. Kahle (2002) confirms the existence of a link between managerial *stock options* and the decision to repurchase.

Regarding the control variables, our results show that when the dependent variable is the decision to repurchase, we observe a non-significantly negative relation with the FCF level. However, this relation becomes significantly positive at the 10% threshold when our dependent variable is the increase of dividends. This is consistent with our findings in another study where it was concluded that the dividend appears as the form of distribution that best responds to the management of FCF.

This is surprising because, given the non-recurring nature of share repurchases; we would expect preferences on the part of executives for this form of distribution. However, the preference for dividends can be explained by the permanent FCF.

The results of this paper show that the decision to repurchase is significantly positively associated with principal indicators that measure the exercise of *stock options* by employees (managers or not) and also to the extent of granting *stock options* to executives. It also seems that companies use, in part, repurchases to improve their *stock option* policies.

Conclusions

This paper is interested in the studying the relationship between repurchasing and *stock options* policy.

The reasons concerning the impact of dilutive *stock options* are analyzed by distinguishing between *stock options* granted to employees and *stock options* granted to executive specifically. The results show, first, a positive link between the near future exercise of employee *stock options* and share repurchases. The desire to avoid the dilution associated with the exercise of *stock options* can thus be one of the reasons for workforce buybacks. The results then show that managers who hold a substantial number of *stock options* encourage companies to repurchase shares. Therefore, it is probable that companies using, in part, buybacks in order to achieve one of the main objectives of *stock option* plans, namely the reduction of conflicts between managers and shareholders.

On the other hand, we detected a negative relationship between the existence of managerial *stock options* and the policy of increasing dividends. This link confirmed the substitution hypothesis for dividend repurchases in the presence of managerial *stock options*. The fact that the payment of dividends reduces the value of executive *stock options* seems to be a plausible explication for companies' increased reliance on repurchases.

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